

## REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

### **Status of the Claims**

Claim 1 is amended. Claim 11 is cancelled without prejudice or disclaimer. Claims 12-18 are added. No new matter is added.

### **Claim Rejections under 35 USC 112**

Claim 11 was rejected under 35 U.S.C. § 112, first paragraph. Claim 11 is cancelled and thus, rejections as to claim 11 are moot.

Claims 1-5 and 9-10 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner objected to the use of x and y in the formula  $RE_{1+x}Ba_{2-x}Cu_3O_{7-y}$ . Claim 1 is amended to recite, among other features, said thin film is made of a RE, Barium, Copper and Oxygen (Sm 123) based superconductor. Thus claim 1 is in compliance with the requirements of 35 U.S.C. § 112. Applicant respectfully requests that the rejections are withdrawn.

### **Claim rejections under 35 USC 102 & 103**

Claims 1-5 and 8-10 are rejected under 35 U.S.C. 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hasegawa et al. ("Preparation of  $SmBa_2Cu_3O_y$  Films with improved In-plane Alignment by Pulse Laser Deposition", J. Japan Inst. Metals, 20 April 2002, Vol. 66, No. 4, pages 320-328). This rejection is respectfully traversed due to at least the existence of unexpected results.

Claim 1 recites, among other features, a thin film formed on an underlayer made of  $BaZrO_3$  the thin film having a critical current density of more than  $4 \times 10^5$  A/cm<sup>2</sup>. Hasegawa et al. fails to teach, suggest or render predictable the above features. The primary argument rejecting the critical current density feature of more than  $4 \times 10^5$  A/cm<sup>2</sup> is "like materials are

used and formed in a like manner they are expected to have the same physical properties.” Like materials would be expected to act in like manner. However the authors of the Hasegawa et al. reference were not able to achieve the electrical properties disclosed in claim 1. In contrast, the present applicants were able to create a structure having a critical current density of more than  $4 \times 10^5$  A/cm<sup>2</sup> due to the physical properties of the layers as recited in claim 1.

Thus unlike the Hasegawa et al. reference, by the time of the present invention the applicants were able to achieve the unexpected results of an increased critical current which is significant improvement in the superconductor thin film art. In contrast, the authors of Hasegawa et al. reported that they were unable to attain sufficient superconductive characteristics. (Hasegawa et al.; page 3, lines 12-16)

Therefore, claim 1 is believed to be allowable over Hasegawa et al. Because claims 2-5 and 9-10 depend from claim 1, they are believed to be allowable for at least the same reasons claim 1 is believed to be allowable.

### **New Claims**

Method claims 12-18 are added to further protect embodiment of the present invention. Accordingly the new claims are patentably distinguishable over the references of record at least for reasons discussed above, with respect to claim 1. In addition new claims 12-18 are further distinguished from the references of record.

For example, new method claim 12 recites, among other features,

applying a magnetic field of at least 1T parallel to a c axis of the thin film at a temperature of 77K or greater and providing a thin film that is superconductive at a temperature higher than 91 K and providing thin film with a critical current density of more than  $4 \times 10^5$  A/cm<sup>2</sup>.

In the Office Action dated January 09, 2008, the Examiner stated that Hasegawa et al. do not appear to teach the thin film as superconductive and having a critical current density of more than  $4 \times 10^5$  A/cm<sup>2</sup> when a magnetic field of at least 1T is applied. (Page 4, lines 12-17)

Thus, Hasegawa et al. fail to disclose applying a magnetic field or having a critical current density of more than  $4 \times 10^5$  A/cm<sup>2</sup>. Therefore Hasegawa et al. fail to teach, suggest or render predictable features of claim 12. Hence, claim 12 is believed to be allowable. Because claims 13-18 depend, directly or indirectly from claim 12 they are believed to be allowable for at least the same reasons claim 12 is believed to be allowable.

**Concluding Remarks**

After amending the claims as set forth above, claims 1-5 and 9-18 are pending.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

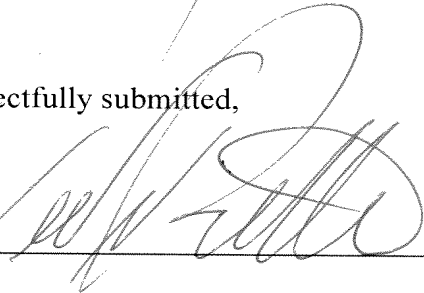
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date

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By



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